AI Simulation for Commercial Vehicle Insurance
Enhancing Telematics with Cognitive Driver Behavior Modeling

Market Context – What Insurers Use Today

Telematics UBI is mainstream

"Pay How You Drive" programs. Smartphone apps and devices track driving to adjust premiums

Common metrics monitored

- Speeding,
- hard braking,
- rapid acceleration,
- sharp cornering

Driver scoring & coaching

Feedback based in score. Discount and incentives, provided to the drivers

Data-rich but real-world only

Even insurers with the biggest datasets, have blind spots in their data.

The Problem – Data Gaps and UBI Limitations

Limited context & "why"

Telematics flags what happened (e.g. a hard brake or speeding incident) but not why.

Rare events not captured

There is not enough data for rare events in telematics.

No "what-if" analysis

Insurers do not know how a driver may react to situations they have never encountered.

Static risk models

Relying on historical data means insurers react to past behavior. It is hard to anticipate emerging risks or coach drivers proactively using only yesterdays data.

The Solution – What cogniBIT Enables

Scenario-based simulation

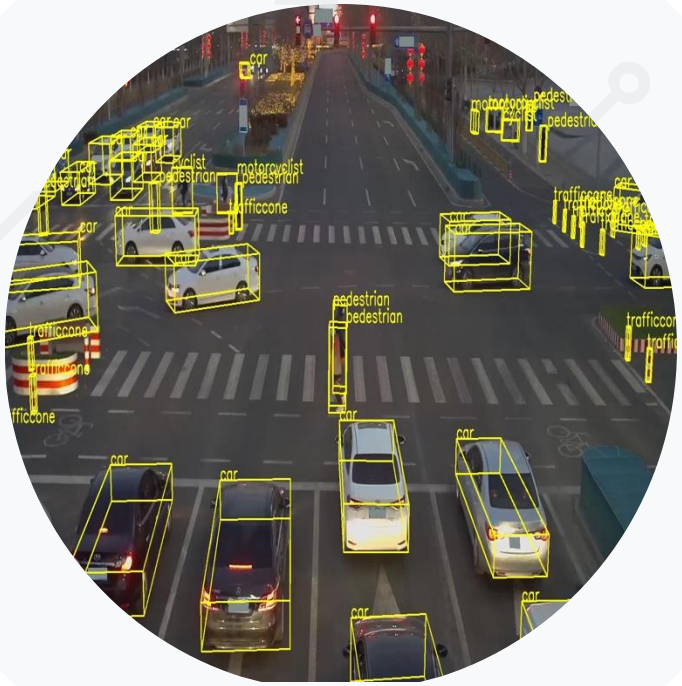
cogniBITs AI-driven simulation suite can recreate complex driving scenarios on demand and can analyze edge case scenarios including comparisons to best driving practice.

Human-like driver models

Cognitive driver AI, driveBOT, realistically mimics how drivers perceive, think, and act. It can perform as a digital twin of the driver in real- time.

Behavior profiles on demand

Insurers can model different driver personas – from an aggressive tailgater to a cautious rule-follower or a fatigued trucker.



Synthetic data generation

Synthetic driving data creation at scale while basing it in part on real life data.

Validated & explainable

Every simulation and recorded real world scenario is reproducible and explainable, giving actuaries and safety teams confidence in the insights.

Real-World Use Cases

Advanced driver testing (ADAS/AV)

Automotive innovators already trust us to inject unpredictable human traffic behavior into assisted and autonomous vehicle simulations. Emotions and human errors, are simulated to test how self-driving systems handle real human reactions.

Dashcam insight project

In collaboration with a fleet tech partner and Chalmers University, we converted dashcam footage into simulation scenarios. Real video of on-road events (near misses, accidents) became actionable simulations to analyze driver behavior and "replay" risky situations safely. We uncovered hidden risk factors and demonstrated how an insurer might analyze crash footage through AI simulation.

Driver coaching scenarios

Use existing libraries or generate new scenarios for claims, training, underwriting, etc.

Business Models and Integration

Software licensing

Use cogniBIT architecture:
License our BOTs internal use. Integrate it into existing analytics systems to enable behavior-based risk modeling and virtual scenario generation.

Synthetic data as a service

Access project-based synthetic datasets tailored to your risk scenarios. Define parameters—we deliver high-quality simulation data to enhance underwriting, claims analysis, and predictive modeling. Pricing scales with data volume and scenario complexity.

Behavior analysis projects

Use our simulation expertise to analyze your existing driving data. We model behavioral scenarios to uncover hidden risks and deliver, actionable insights – via reports or system integrations.

Easy integration

Our models use standard formats and are platform-agnostic, enabling seamless integration via API or data export – no changes to your existing tech stack required.

Tailored to your market

Simulations can be calibrated to regional conditions and driving norms—urban vs. rural, state-level patterns, or even country-specific differences—to match your portfolio needs precisely.

Transparent & Evolving

Our focus is on human traffic behavior. While aspects like weather or sensor failures aren't core today, they can be added in future versions. Our simulation is a robust, realistic tool – and it continues to grow with your needs.

Strategic Fit – Enhancing Data-Driven Fleet Insurance with Simulation

Additional Data for your Underwriting Models

Simulation enhances these systems by introducing behavioral insights that go beyond raw metrics – helping to predict risks before they manifest.

Dynamic Pricing Based on Real-Time Feedback

By simulating specific risky driving styles or behaviors, we can support more granular pricing models.

Dashcam & Sensor-Based Risk Analysis

With us, this real-world footage can be recreated as simulation inputs – transforming it into actionable, repeatable test scenarios to better understand driver behavior and prevent future incidents and as a real time digital twin for driver behavior.

Behavior-Driven Safety Programs

AI-powered simulations allow insurers to build safety programs around driver types and reactions. We can simulate aggressive, distracted, or fatigued drivers – and the data can be used to develop tailored mitigation strategies and training tools without waiting for accidents.

Predictive Underwriting with Synthetic Data

Simulating millions of near-miss and crash scenarios under controlled variables can enhance underwriting precision and reduce blind spots. This synthetic data approach augments scarce or incomplete real-world datasets with behaviorally grounded, explainable inputs.

Enable Scalable Tools for Fleet Insurers

Any insurer focusing on commercial vehicles and data-driven operations can benefit from integrating simulation technology into their analytics pipeline – for training, underwriting, claims analysis, or regulatory readiness.

Call to Action – Let us Innovate Together

Contact us to schedule a workshop or demo.

- *andreas.dirring@cognibit.de*
- *Info@cognibit.de*

What data is missing in your current telematics set?	Identify the blind spots. (Perhaps certain behaviors or scenarios you wish you understood better but have no data for – yet.)
Which behavior patterns would you like to understand or predict?	Aggression, distraction, fatigue, compliance… What if you could safely explore how these factors truly impact risk for your insured drivers?
What risky behaviors would you like to reduce – or positive ones to teach your drivers?	Consider how virtual scenario training or modeling could reinforce the good and mitigate the bad, before accidents happen.
Are you prepared for the next era (autonomous and assisted driving)?	As autonomous vehicle adoption grows, how will your insurance adapt? We can simulate those interactions, helping you stay ahead.
Next Steps	Let us run a pilot simulation together so that you can see the value of the cogniBOT architecture.